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IN THE

Supreme Court of the United States

OCTOBER TERM, 1977

No. 76-1810

CITY OF LOS ANGELES ET AL.,
Petitioners,

v.

MARIE MANHART ET AL.,
Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Ninth Circuit

BRIEF FOR THE SOCIETY OF ACTUARIES AND THE AMERICAN ACADEMY OF ACTUARIES AS AMICI CURIAE

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BRIEF FOR THE SOCIETY OF ACTUARIES AND THE AMERICAN ACADEMY OF ACTUARIES AS AMICI CURIAE

INTEREST OF THE AMICI CURIAE [1]

This brief is submitted by two professional actuarial organizations, the Society of Actuaries and the American Academy of Actuaries.

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[1] The parties' letters of consent to the filing of this brief have been filed with the Clerk pursuant to Rule 42(2).

The Society of Actuaries was formed in 1949 by a merger of the Actuarial Society of America (founded in 1889) and the American Institute of Actuaries (founded in 1909). Members are either Associates or Fellows. To become an Associate of the Society, it is necessary to pass a series of five examinations, except where a waiver is granted for distinguished foreign actuaries. Admission as a Fellow of the Society requires passing four additional examinations.

These examinations are given by the Society and cover a broad range of topics involving actuarial considerations. In addition to general actuarial theory, the examinations cover a number of applications of actuarial theory, including extensive training in employee retirement plans. Passage of these examinations is widely recognized as denoting high professional stature as an actuary.

The American Academy of Actuaries was formed in 1965 as a national accrediting organization by the four existing national actuarial organizations—Casualty Actuarial Society, Conference of Actuaries in Public Practice, Fraternal Actuarial Association, and Society of Actuaries (the "constituent organizations"). The Academy and its constituent organizations, or their predecessors, have represented the actuarial profession in the United States for nearly 90 years.

The accreditation role of the Academy fills a void, since the states do not license actuaries in a fashion similar to most other professions. The Academy membership today encompasses qualified actuaries in all areas of specialization and practice within the profession. Entry into the Academy involves both education and experience requirements. Over 90% of those actuaries in the United States who have satisfied the entrance requirements of the Academy have become members.

There are currently over 7,000 members of the Academy and the four constituent organizations. These actuaries

are employed by independent consulting actuarial firms, insurance companies, governmental departments and agencies, and institutions of higher learning in academic roles. In recent years actuaries have also been employed by accounting firms, management consulting firms, industrial corporations and labor unions.

The actuarial profession, as one of its major and most significant activities, plays a central and necessary role in the design and administration of employee retirement plans. In that connection actuaries perform computations and make recommendations without which these plans could not be sensibly and effectively administered. In many cases these computations and recommendations take into account the sex of the employees that participate in or are covered by the retirement plans. Our work has made us familiar with the day-to-day operation of retirement programs. The work requires special training and experience and an understanding of a branch of mathematics—the theory of probabilities—without which anyone treating with averages and the classification of risks can fall rather easily into serious error.

We believe, accordingly, that we are in the unique position of being able to offer the Court information that will supply a contextual background that should be helpful in its consideration of this case. We shall, for the most part, leave to the parties and the other amici discussion and analysis of the legal materials that bear upon the proper interpretation in this context of the prohibition in Title VII of the Civil Rights Act of 1964 of discrimination against any individual "with respect to his compensation, terms, conditions or privileges of employment because of such individual's . . . sex . . . ." Actuaries have no special expertise to offer in this regard. We can, however, help to inform the Court about the extent to which the sex of covered employees is and will continue to be taken into account in the administration

of retirement plans, about the manner and extent to which present practices might have to be changed if all or some sex classification were prohibited in connection with the fixing of contribution rates and benefit levels, what the principal effects of requiring such changes would be, and in general what the impact of the Court's decision might be in an area that affects hundreds of thousands of employers and many millions of employees. We shall, in the course of that discussion, try to expose as fully as possible the premises that have been accepted by actuaries and which are in substantial part the bases for the opinions and recommendations that they have offered to plan sponsors and to insurance companies in the past.

We note at the outset that from the narrow viewpoint of the economic self-interest of the members of the actuarial profession there is no reason for us to support either affirmance or reversal of the judgment below. We believe we have the obligation to bring to the attention of the Court data acquired by us in the course of our work and to explain the principles and concepts that we employ in that connection.

INTRODUCTION AND SUMMARY

In 1976 over 40 million Americans were participants in some form of non-governmental retirement plan, of which there were about 500,000 then in effect. Putting aside the persons entitled to benefits under the Old Age Survivors and Disability Insurance Program (Social Security), there were, in addition, another 15 million persons covered under retirement plans administered by federal, state and local governments. During 1976, approximately $48 billion was set aside for the payment of future benefits, and at the end of that year approximately $413 billion was held for that purpose.[2]

[2] AMERICAN COUNCIL OF LIFE INSURANCE, PENSION FACTS 1977, 21, 30, 39-40, 41, 43 (1977) (publication of this booklet is due in late 1977 or early 1978; the figures are from a preliminary draft made available by the Council). Corresponding figures for the end of 1975 are at *id.*, PENSION FACTS 1976, 17, 19, 21, 26-27, 29, 31 (1976).

Retirement plans can be broadly divided into different categories in several different ways according to: (1) whether the plan is drawn primarily in terms of the benefits that will be payable to employees upon retirement ("defined benefit plans") or in terms of the contributions that are made to provide those benefits ("defined contribution plans"); (2) whether contributions are made only by the employer ("non-contributory plans") or by the employer and the employees ("contributory plans"); (3) whether the benefits are provided by an insurance company which accumulates and invests the contributions and in certain circumstances also assumes the legal obligation to pay the benefits ("insured plans") or by a trustee that performs the same functions but without assuming such an obligation ("trusteed plans" or "non-insured plans"); and (4) by the form in which the benefits will be paid, as, for example, annuities (monthly amounts for life, or for a stated number of years), or in a lump sum, or in some other manner. Thus, there could be a non-contributory defined benefit insured plan which provides for an election between a monthly payment for life or a lump sum.

Under defined benefit plans the central objective is the payment of a pre-determined annual benefit for each employee reaching normal retirement age, which amount will be payable for the life of the retiring employee. The amount of the annual benefit, with exceptions not relevant here, is the same for a female employee as it is for a male with a comparable earnings and service record. Under defined contribution plans, a specified amount of money is set aside for each employee, whether male or female, and such amounts are accumulated until normal

retirement age. At normal retirement age, the employee is often given the option of receiving the accumulation in a lump sum or having it used to purchase a life annuity.[3]

Women, as a class, live longer than men, as a class. A group made up of a reasonably large number of women will survive for a greater number of years than will an equal number of men, if all other factors that affect longevity, primarily age distribution and health, are identical. The difference is substantial.[4]

As a consequence, if a lifetime pension in the same monthly or annual amount is to be provided for an equal number of men and women of the same ages, a larger amount will have to be expended to pay the pensions to the women than to pay the pensions to the men. Also as a consequence, if an amount of money is to be completely liquidated by the payment of lifetime pensions to a number of women, the annual amount that can be paid to each will be less than can be paid to each of an equal number of men of identical ages in order to completely liquidate an identical initial amount of money. These inexorable facts of life, death and arithmetic, which cannot be changed by any Act of Congress or judgment of this Court, give rise to the narrow issue presented in this case as well as to a number of other analogous issues which may well be affected by the decision.

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[3] A more detailed summary of the principal types and features of retirement plans is set forth in Appendix A.

[4] A discussion of the difference in longevity between men and women and of the probable reasons therefor is set forth in Appendix B.

ARGUMENT

I. The Pooling and Classification of Risks

A fundamental question in this case involves the determination of when individuals may be treated as members of a class to which they belong (and which classes are permissible and which impermissible) and when they must be treated solely as individuals. Since the business of providing and guaranteeing retirement annuities and insurance necessarily involves the pooling and classification of persons and risks, some discussion of why this is so and how it is done is appropriate before we turn to how and why classification on the basis of sex is employed in the administration of pension plans.

As this Court noted in *Helvering* v. *Le Gierse*, 312 U.S. 531, 539 (1941), persons who purchase life insurance seek "to shift and distribute risk of loss from premature death." The risk of loss referred to was that the funds accumulated to meet the needs of dependents would be insufficient if early death occurred. Those who provide annuities seek to shift and distribute the risk that the annuitants will live on unexpectedly for a long time and thereby exhaust the amounts set aside for their retirement years. The actuarial principles and the methods that are employed in those instances are the same as they are in providing insurance against other risks, and may be illustrated by a hypothetical example.

Suppose 10,000 individuals of varying ages have each accumulated $100,000 savings which they wish to use (together with the earnings on the diminishing amounts) to provide level monthly amounts with which to meet their living expenses and which will continue as long as they live. Since no one of them can know how long he or she will live, no one of them can decide how much can prudently be used each month. If all are willing to pool their savings and to receive a level monthly amount that will cease upon their deaths, whether early or late, this

uncertainty can be eliminated. Although it cannot be known at the outset how long any one person will live, the accumulation and analysis of a large body of data permit a very accurate prediction about the rate at which the entire class will die in the future. From this it can be readily determined what periodic installment payments may be made to each of them so that the initial amount of one billion dollars (and the earnings thereon as it is liquidated) will be used up at approximately the time when the last payment is made to the last survivor. Thus the uncertainty faced by each individual can, to a high degree of accuracy, be largely eliminated for the entire group without risk of loss, by pooling the risks and dealing with classes of persons rather than individuals.

Before turning to the question of whether and why the group should be divided into smaller classes when determining the amount that each individual should receive, it should be noted that if it were decided at the outset that all persons in the group should receive exactly the same periodic amount, it is readily determinable, on the basis of the predicted longevity of the persons in the group, what that amount should be. To determine the longevity of the group the characteristics that affect its longevity must be known. If the determination were to be made without taking the ages of the members of the group into account, the result would be grossly inaccurate, if the computation could be made at all, since some guess about the age distribution of the persons in the group would be necessary, and the result would depend significantly upon the accuracy of the guess. This is because any reasonably large number of persons of a given age will, as a group, survive for more years than will an equal number of persons who are, say, ten years older. Similarly, if the determination of the amount to be paid were made without reference to the sexes of the individuals in the group, the result would be seriously and unacceptably erroneous. This is because a large number of women will

survive for a total number of years that is greater than the total number of years that the same number of men of the same ages will survive.

It has been almost universally accepted, however, without serious dispute, that in any arrangement of this kind each person should receive an amount that, within the limits of administrative feasibility, is equal to a proportionate share of the amount that will be paid to the identifiable sub-class of persons to which he or she belongs, the class which most nearly reflects his or her mortality. The validity of this principle that each member of the group should be charged in proportion to the risk that he or she contributes to the pool of risks may be defended on either or both of two related grounds.

The first is that, when annuity arrangements of this kind are sold by a business, then, without reaching the question whether this principle is "fair" or "equitable," it is essential to the successful operation of the business that persons who transfer higher risks to the group than others should be charged more. A well known practice or phenomenon, of great significance to the annuity and insurance business, is known as "adverse selection." It has been the experience of the industry that, if a particular form of benefit is made available to the market at a price that is materially lower than its actual cost, that product will be bought in substantial quantities by the public.[5] Correspondingly, a product that is overpriced will tend to disappear.

To take an extreme example, if an insurance company that is currently charging 65-year-old women $10,000 for a lifetime annuity of $65 per month and charging

[5] Although annuity and insurance contracts contain a number of standard provisions required by law, they also vary greatly from company to company and over time. Contractholders are offered a variety of options, and different features are combined in different ways, reflecting the opinions of different companies about the needs and desires of the market. Each of these options must be priced to reflect approximately their respective costs.

55-year-old women $14,000 for the same annuity were to seek to simplify its procedures while obtaining the same revenue by charging both groups $12,000, it would not be long before there was a substantial increase in the number of its young customers and a decrease or the disappearance of its older customers. The result of such a development would be substantial losses.[6] The business simply cannot sensibly be conducted in this fashion. For this reason new products are intensely scrutinized by actuaries to guard against the possibility of adverse selection, and, even so, dramatic examples of the practice continue to occur. It is this principle of adverse selection that explains why age and sex alone have been the significant factors in pricing annuities.[7]

Second, many of the members of our profession also believe that there is a concept of "actuarial equity" that is sound, and that the value judgment can be made that it is "fair" to take into account differences in the risk contributed by an individual or group of individuals whenever there is sufficient statistical experience to make reliable predictions about those differences. They believe that where it is probable that a person or class of persons will receive a larger share of the total benefits to be disbursed, the person or class (or those contributing on their behalf) should contribute a larger share of the

[6] Some 200 years ago in England, merchants and professionals formed insurance societies that exacted assessments independently of age, sex, or other factors, and these societies failed as members aged, died, collected benefits, and thrust the costs onto the prospective young members, who therefore refused to join. R. MITCHELL, FROM ACTUARIUS TO ACTUARY 1, 2 (1974) (booklet published by Society of Actuaries).

[7] Additional factors such as health and occupation are significant in pricing life insurance: if a person knows that he or she is likely to die sooner than the average (say, because of diagnosed disease or a hazardous occupation), then that person is not likely to purchase an annuity. The person "self-selects" out of the pool of participants. In the case of life insurance, however, the prospective purchaser has the opposite motivation; thus the insurance company must take the applicant's health and occupation into account.

amount needed to pay the benefits, even though it is not certain at the outset that they will actually receive a higher amount.[8] "Actuarial equity" thus requires not only that persons with similar risks be treated alike but that persons with dissimilar risks not be treated alike. This view has probably played a large role in many state nondiscrimination laws that prohibit only "unfair" discrimination among persons in different classes.[9]

Two qualifications must be noted. Actuaries recognize that it is not only impossible to quantify the risk contributed by each individual, it is also not necessary to extend the classification process to its ultimate limit. Two classes with observable differences may nonetheless be lumped together and treated as a single class if the relevant differences, though identifiable, are relatively small. The minor "unfairness" may be outweighed by the added expense involved in treating the two cases differently. Moreover, small differences do not give rise to significant adverse selection and so are acceptable. Second, certain classifications which may be perfectly feasible from an actuarial standpoint may be barred by others for reasons of social policy. For example, black persons exhibit shorter longevity than white persons, but they are not charged a lower amount when they purchase annuities or a higher amount when they purchase life insurance.[10]

[8] S. HUEBNER & K. BLACK, LIFE INSURANCE 501 (8th ed. 1972); P. SHEPHERD & A. WEBSTER, SELECTION OF RISKS 1 (1957).

[9] See, *e.g.*, IOWA CODE § 507 B.4.7(a), (b) (1975), MD. ANN. CODE art. 48A, § 223(a) (1972); VA. CODE ANN. § 38-715 (1977 Supp.) *But see* D.C. CODE ANN. § 35-715 (1973) ("unfair" qualification omitted). For citations to the corresponding provisions of all the states, see Bailey, Hutchison, & Narber, *The Regulatory Challenge to Life Insurance Classification*, 25 DRAKE L. REV. 779, 782 n. 17 (1976).

[10] Over the last 40 years the difference in mortality between black and white persons has been narrowing. Moreover, at the higher ages which are of primary concern in retirement plans the differences have become virtually nonexistent. U.S. DEPT. OF HEALTH, EDUCATION AND WELFARE, PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR

If any classification that is actuarially sensible is to be prohibited by law, it must be done by persons responsible for making and interpreting the law. Such a decision will ordinarily be accompanied by an increase in cost or by a change in the manner in which total cost is divided, and ideally the persons responsible for the prohibition should decide how the division of costs should be made.

II. Classification on the Basis of Sex in the Administration of Retirement Programs and the Effects of Prohibiting This Practice

We turn now to the examination of the extent to which sex differences are currently taken into account in the administration of retirement plans and to the types of problems posed if current practices are required to be substantially revised. We believe it would be more helpful to the Court if we treat this subject in an organized way and discuss the specific type of plan that is at issue in the case at bar when it arises naturally in the discussion rather than at the outset. In the discussion that follows, the comparisons assume that the men and women involved are similarly situated, that is, such factors as salary, age, and length of service are identical.

A. *Defined Benefit Plans*

1. *Non-contributory plans.* Most defined benefit plans in effect today are non-contributory, that is, the employer pays the entire cost of the plan. Such plans ordinarily provide for the payment of equal monthly pensions as a single life annuity at retirement, without regard to the sex of the retiring employees. Such a non-contributory defined benefit plan provides a monthly (or other periodic) payment that is identical for both sexes, assuming, as we have said, that all other applicable factors are the same.[11] So far as we know no one has suggested that such a plan discriminates unlawfully or unfairly on the basis of sex. Upon a closer look, however, it becomes evident that the issue is not as simple as might at first blush appear.

Many, and perhaps most, defined benefit plans permit employees to elect to receive their benefits in a different form than in equal installments payable for life. Indeed, ERISA now requires that, unless a married employee elects otherwise, the benefit must take the form of a "joint and survivor annuity" (installments payable so long as either spouse remains alive). The question immediately arises, if for example the "normal" pension is equal to $1,000 per month for a retiring employee regardless of sex, what the monthly payments should be under a joint and survivor annuity, to take into account the fact that the benefits will be paid over a longer period of time. A similar question arises if the plan permits its employees to elect, instead of a joint and survivor annuity, an annuity for the period of the employee's life with a minimum payment period of ten years or if the plan permits the benefit to be paid in a lump sum upon retirement.[12]

Employers have great flexibility in deciding what the benefit formulae shall be, and so we cannot describe any current universal practice. (App. A, p. A-1.) In the majority of cases, the ages and sexes of the participants

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HEALTH STATISTICS, VITAL STATISTICS OF THE U.S. 1971, Vol. II, Pt. A, § 5 at 10 (1975). *See also* Metropolitan Life Insurance Co., *Longevity in the United States at New High*, 58 STATISTICAL BULL. 9 (May 1977); *id.*, *Expectation of Life Among Nonwhites*, 58 STATISTICAL BULL. 5 (March 1977).

[11] In practice, the employer's cost as a percentage of pay may be higher or lower for the class of female employees, than for the class of male employees, depending upon the number of persons in each class and upon differences in mortality rates, disability rates, withdrawal rates, rates of salary increase, average retirement age and other factors.

[12] Only a minority of defined benefit plans permit a lump sum to be elected but there is no legal restriction against such a provision.

and spouses have been taken into account. Under a typical trusteed plan, for example, where a 65-year-old man who retires with a wife who is also 65 years old chooses a 50% joint and survivor annuity (payments to a spouse who survives the employee will be one-half of the initial installment payments), the monthly benefit is reduced from $1,000 to take account of the fact that the benefit may be paid over a longer number of years. The $1,000 per month might be reduced to $870 per month. If the retiring employee is a woman and her husband is 65 years old and she makes the same election, her $1,000 monthly pension might be reduced to $940 for a monthly difference of $70. The $70 difference reflects the fact that the beneficiaries added in each case have different life expectancies. The female employee has less reduction because there is less chance that her husband would collect payments after her death than there is in the case of a male employee with a wife age 65. The pensions are thus kept equal in cost, and, although the monthly amounts of pension differ, their values are equal if the length of time during which they are expected to be paid is taken into account.

If the two employees choose instead a lifetime annuity with payments to be made for no less than ten years ("ten years certain"), then the installment payments may be reduced to $910 for the retiring male employee and $960 for the retiring female. Finally, if a lump sum is chosen by each of them under a plan that allows such lump sum distributions, the man will receive $111,000 and the woman $130,000. Thus, women would receive a significantly larger payment after completing the same work tour as men.

The principle that is followed in determining the foregoing amounts is that the amount to be received by a retiring employee and the employee's beneficiaries, regardless of the form in which the benefits are taken, should,

under assumptions of mortality and interest rates, be the actuarial equivalent of the "normal" or "primary" benefit. In more functional terms the amount of the benefit is determined so that, if the actual interest rate and the actual mortality of the employees are the same as that anticipated at the time of retirement, the cost of the benefit to the employer will be the same, regardless of the form in which the employee elects to receive the benefit.

Some plans determine the amount of joint and survivor benefits by the application of factors which do not take sex into account. Some plans have done so in order to reduce employee dissatisfaction which occurs because employees do not understand the reason for differing actuarial factors. In the joint and survivor example given above, instead of a payment of $870 for male employees and $940 for female employees, such an employer might shift to $900 regardless of sex. This would result in a reduction in cost for the employer to the extent that female employees elect the joint and survivor annuity. On the other hand, the plan would have an increased cost for male employees who make such an election. Some plans also do not take the sex of the retiree into account when converting a lifetime annuity into an annuity with ten years certain, although many do so. We know of no plans which do not take sex into account if lump sum payments are to be made.

The use of factors that do not take sex into account has been possible only in a plan where the gain or loss is borne by the employer. As is explained more fully below, under certain insured plans where the obligation to pay the benefit has by contract been assumed by an insurance company, the contracts in current use require the use of conversion factors that include sex as a factor, and it would not currently be possible for an employer to

shift to unisex tables in determining joint and survivor benefits.

Another very commonly found provision permits the early or deferred retirement by an employee. Some plans provide for no change in the pension if such an election is made, and some plans provide for a change in the benefit by the application of retirement factors that do not take sex into consideration.[13] Other pension plans include early retirement factors which do reflect the separate mortality experience of males and females, and these provide a lesser reduction for women than for men.[14] Here again this is obligatory under certain kinds of insured plans.

Since there are many plans already in existence which do not provide for a reduction which differs by sex, it obviously would not be impossible for most plans to comply with a requirement that early retirement factors be independent of sex. Depending on the revised early retirement factors adopted and the extent to which early retirement is elected by persons of different sex, the change might increase or decrease the cost to employers. Some employers might choose to offset any such change by making approximately corresponding changes in other features of the plan. A similar analysis can be made of provisions that prescribe how the amount of a pension will change in the event of deferred retirement.

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[13] In at least one case it has been held that a plan that provides a reduction for men in the case of early retirement and for a lesser reduction for women for reasons unrelated to differences in longevity violates Title VII. *Rosen* v. *Public Service Electric and Gas Co.*, 328 F. Supp. 454 (D.N.J. 1970), *on remand from* 409 F.2d 775 (3d Cir. 1969).

[14] The EEOC has held that such a plan provision violates Title VII. EEOC Decision No. 72-1919, June 6, 1972, CCH EEOC DECISIONS (1973) ¶ 6370. We suggest respectfully that, while the decision may or may not be correct, the opinion does not reflect an appreciation of what we regard as the genuine difficulty of the issue that was presented.

What would be the result if it were to be held that Title VII or some other Act of Congress requires that all benefits, in whatever form elected, must be numerically identical rather than actuarially equivalent for employees of different sexes who are otherwise similarly situated? Such a requirement might be met in a variety of ways. To simplify the discussion, we shall change the above example to a plan with only the alternatives of a monthly lifetime pension and a lump sum. The employer might agree to pay all male employees who elect a lump sum $130,000 instead of $111,000. This, of course, would increase the cost to the employer and some employers might not be willing to assume this additional cost. There is no legal requirement concerning the overall level of benefits that must be provided, and some plans are far more generous than others. Accordingly, some employers might decide instead to reduce the lump sum payable to retiring female employees who elect that benefit to $111,000. That would reduce the employer's cost, but it would hardly be of any benefit either to male or female employees. It would also raise questions about whether already vested benefits could be "reduced" in this fashion. Finally, the employer might try to keep its costs unchanged, at least prospectively, by providing that a pension benefit of $1,000 per month could be converted, for both male and female employees, into a lump sum of $120,000. The difficulty with this solution is that, if it were adopted, male employees who were well advised and who actually desired a lifetime pension might be able to elect a lump sum benefit, buy an annuity of $1,000 per month from an insurance company for less than $120,000 and pocket the difference. This would raise anew the question of whether equality between male and female employees had in fact been achieved. The added benefit provided to male employees in this illustration would come partly from the employer and partly from

those women employees who had uneconomically elected a lump-sum benefit.

Another solution, and one that many expect would be the result, would be the determination by some employers to eliminate certain options, particularly the lump sum distribution option. This would be disadvantageous to the class of both women and men who might find the lump sum option attractive for such reasons as major illness.

2. *Contributory plans.* Most defined benefit plans are noncontributory, but a substantial minority requires employee contributions. Employee contributions are almost always—unlike the plan in the case at bar—unrelated to age or sex. To the extent that employee contributions are related to age or sex, they are found in plans adopted by governmental bodies and not by private institutions.[15] Under most contributory plans the employer's aggregate contributions will be substantially greater than the aggregate contributions made by employees.

Since defined benefit plans which provide for different contribution rates for male and female employees are exceedingly rare, there would not be a widespread effect if equal employee contribution rates were to be required in the case at bar. Significant problems would arise, however, if the sex of the employees could not be taken into account in determining amounts of benefits or amounts of employer contributions in contexts that have already been described and in others yet to be described. In particular, a determination that the amount of employee benefits in any form must be identical for both sexes would have a dramatic impact.

It should be made clear that whatever decision may be made concerning the permissibility of taking sex into

[15] Note 18, *infra*, provides a possible explanation for the origin of this type of plan.

account in fixing the contributions or the benefits under a defined benefit plan, actuaries must be able to continue to take the sex of employees into account in connection with their determination of what probable costs must be borne by the employers under such plans.[16] The actual cost, of course, will be determined by what is in fact paid, the expenses of administration, and the earnings rate. The job of the actuary is to help the employer make an accurate estimate of how much should be contributed annually, without imposing an excessive strain in any given year, in order to produce an amount sufcient to pay all of the promised benefits. In determining what contributions should be made, the actuary must take account of the expected experience concerning mortality, disability, turnover, salary increases and other factors which studies have shown differ by sex. If the actuary does not do so, the determinations will be less accurate, and we can hardly believe that any provision of law requiring non-discrimination among persons will be interpreted to prohibit an employer that would like to have as accurate information as possible from obtaining it from a person who is able to provide it.

3. *Insurance contract plans.* Some plans are funded exclusively with individual insurance and annuity contracts with level annual premiums. If such plans meet the requirements of Section 301(b) of the Employee Retirement Income Security Act of 1974 ("ERISA"),[17] they are known as "insurance contract plans." For insurance contract plans and certain other insured plans,

[16] Since defined benefit plans provide primarily for the benefits that will be payable, it is not necessary, as it is under a defined contribution plan, to establish individual accounts or to make contributions for individual employees, so that the question of whether equal contributions are being made for male and female employees, while an appropriate one to ask, does not have as evident an answer.

[17] Pub. L. 93-406, 88 Stat. 829, 29 U.S.C. § 1081(b) (Supp. V 1975).

any general requirement that contributions must always be equal or that benefits for persons of different sexes must be identical rather than actuarilly equivalent would create far more difficult problems than those generally faced by other plans. To the extent that only some of the existing practices are invalidated and others found to be acceptable, the difficulties, of course, would be correspondingly reduced.

The reason for the greater difficulty arises from the fact that under insurance contract plans and some other insured plans the obligation to pay pension benefits has been transferred from the employer or the plan to the insurance company, and the insurance company's contractual obligations run directly to the individual employees. Those contractual obligations are normally cast in terms that provide for actuarial equivalence, if an employee elects to change the form of the benefits. If only numerically equal payments are to be deemed to be satisfactory, that is, if males and females must be entitled to the same monthly or other periodic payment, or alternatively to the same lump-sum payment, and if such a decision is made retroactive, the result—in our carefully and thoroughly considered opinion—would be chaotic, if not impossible, under these insured plans. The revision and adjustment of the existing relationships involving millions of persons would be a monumental and very probably impossible task. Even if a decision of this kind were expressly given only prospective effect, compliance by insurance contract plans would still present exceedingly difficult problems. The terms of the sale of annuity contracts and insurance policies by life insurance companies have not been directly or indirectly subject to Title VII of the Civil Rights Act of 1964, and, since an essential aspect of the insurance business involves setting charges at levels that are accurately related to the nature and extent of the risks involved, any ruling that creates

disparities between the amount and the cost of certain benefits would necessarily result in the most serious problems for insurance contract plans. We would not even attempt to predict, at this time, what the response of the industry would be to such a decision.

It has been widely suggested that classification on the basis of sex could satisfactorily be eliminated in future contracts by prohibiting life insurance companies from making different charges for lifetime annuities to men and women despite the longevity differences that the two groups display. This would be accomplished by combining the experience of men and women and constructing a single "unisex" mortality table. Whether this would be an acceptable solution is a matter that is exceedingly complex, and an accurate explanation of the problems that would be created and the manner in which they might be solved would require careful and detailed analysis at least as lengthy as that already set forth in this brief. The problems are related but in many respects are quite different. The question of the extent to which adverse selection would result is one that particularly requires examination and analysis of the actual numbers that are involved. In order to avoid extending unduly the length of this brief, we shall not undertake to discuss any of those problems here. In fact, there is no legislation currently pending to require the adoption of unisex tables by all life insurance companies. If such a requirement were imposed upon some but not all insurers, the competitive impact would be most severe. In the circumstances it seems advisable to deal with the situation as it exists today and not to treat with problems that might arise if hypothetical changes were to be made in federal or state law.

It is important to note, however, that in some respects the purchase of insurance or annuities offers greater advantages to employers that have relatively few em-

ployees than to large employers, although some of the country's largest corporations have adopted insured funding for a variety of reasons. The probability that the mortality experience of a relatively small group of persons will diverge from what is anticipated is very much greater than it is for a large group of persons. For a smaller pension plan the purchase of annuities for retired members may provide greater assurance that the promised pensions will actually be paid, no matter how long the pensioners live. The burden of any major change resulting from the prohibition of risk classification by sex is thus more likely to fall more heavily upon smaller employers than upon larger employers. Many small employers currently use insured rather than trusteed plans.

In some respects a given pension plan may present a greater appearance of unwarranted discrimination if it is an insurance contract plan. A trusteed non-contributory defined benefit plan that provides only equal pension benefits will require, as we have pointed out, a determination of the amounts that must be contributed annually to provide proper funding. These amounts are not allocated to any particular employees; all that is readily observable is the total amount contributed each year. If the plan were one established by an employer with relatively few employees it might be funded by the purchase, for each employee, of individual retirement income or annuity contracts. The aggregate contribution might be about the same as under the trusteed plan but it would be made up of contributions under separate contracts, the amount of which would be larger for female employees than for identically situated male employees. Thus it would be easier to raise the question of compliance with Title VII because the employer seems plainly to be making larger aggregate pay-

ments for salary and pension benefits for female employees than for identically situated male employees.[18]

B. *Defined Contribution Plans*

It is extraordinarily rare for a defined contribution plan (except for the target benefit plans discussed at Part C) to provide that different contributions will be made for male and female employees who are otherwise similarly situated. And, since these plans do provide that separate contributions shall be made for each employee which will be accumulated and used to provide the benefits for that particular employee upon his or her retirement, the issue of discrimination on the basis of sex would not seem even to arise. Indeed it does not arise for a plan that provides benefits only in the form of a lump sum or in the form of installments over a stated period of years. Under such a plan there is no pooling of risks. This is true whether the plan is insured or non-insured, and in either case there is no necessity for classification on the basis of sex. Where, however, the plan does provide for a form of benefit that involves life contingencies, the issue arises. This would occur if a lifetime annuity were to be offered as an alternative to, or instead of, the payment of benefits in a lump sum.

Providing the option of life annuity payments plays an important role in meeting the needs for an adequate

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[18] It may be of interest to know how plans of the type in the case at bar came to be adopted. When state and local governments first began to adopt retirement plans for their employees, it was quite common for a decision to be reached that they should be provided for by equal contributions by the employer and the employee. Since the cost of funding pensions for female employees who remained to normal retirement was higher than for similarly situated male employees, and since half the amount was paid by the employee and half by the employer, higher contributions were required for female employees. This practice has become less common over time and is now quite rare.

retirement income for employees. If the individual retiree receives his or her account balance as a lump-sum payment, the retiree may spend it all before death and spend his or her final years in poverty. Similarly, if the retiree elects installments for a fixed period of years, even if that period equals the life expectancy, the retiree may outlive the payments and have no income in later years. Guaranteeing payments for life, or as long as either the retiree or spouse lives under a joint and survivor annuity, provides an important social role in meeting the needs of retired people.

If it were not allowable to apply the account balance to purchase annuities unless identical monthly benefits were paid to both males and females, employers that had adopted insurance contract plans could not supply the annuities. Their only currently available alternative would be to eliminate entirely the option to obtain life annuity payments and require all participants to take their distribution in a lump-sum payment or in installments not guaranteed to last for life.

Some defined contribution plans do not allow payment of the account balance as a lump-sum payment, but require that it be applied instead to provide only for a lifetime income or for a choice among several types of annuities, each involving life contingencies. The latter type of plan is not common, but it is used by many colleges and universities and by many non-profit health and welfare agencies. Under a defined contribution plan the value of the plan benefit is equal to whatever dollar amount is credited to the employee's account on the date of retirement. In a plan that provides only for annuity benefits, the question is how that value is to be lawfully converted into installment lifetime payments of the "correct" amount, in order to comply with Title VII of the Civil Rights Act of 1964.

Since every insurance company offers to provide annuities in amounts that are different for men and women if an identical single purchase payment is made, the issue arises whether the use of two identical account balances to provide unequal installment payments for men and women constitutes an unacceptable discrimination on the basis of sex. If it were to be held that, under Title VII, a plan may lawfully provide for an election between identical lump-sum benefits for men and women and monthly installment payments for life that are higher for men than for women, then, in our view, it would be thoroughly inconsistent to hold that a plan that provides only the differing monthly lifetime benefits violates the Act. The cost and the value of the benefits provided by both plans are the same. If both types of plan were held to violate the Act, this could only mean that plans of this kind would simply have to be abandoned, with the probable result that employees, male and female, who would otherwise be covered by such plans would have to look elsewhere for their retirement incomes.

Some plans provide for part of the equal contributions made for men and women to be used for the purchase of life insurance. (App. A, p. A-5.) Virtually all major insurance companies charge lower life insurance premiums for females than for males. If a male employee and a female employee for whom the same annual contribution is being made each chooses to have an identical portion of that contribution used for the purchase of life insurance, the female employee will be provided with a larger face amount of insurance. If she survives to retirement, the insurance policy will probably have a larger cash surrender value than the policy purchased for the man, while the rest of their accounts will be identical. Thus, the female employee will receive a higher benefit than a male employee if both elect a lump sum, although the man will still be given higher monthly lifetime payments if this form is elected. Similarly, if the two employees should

each choose to have an identical amount of life insurance purchased for them, the woman would probably receive a larger total lump sum benefit upon retirement.

The question in either case is whether this would constitute a violation of Title VII and, if so, whether it discriminates unfairly against men or against women. The only method for an employer to eliminate such differences by sex would be to provide only a lump-sum benefit or to find an insurance company which uses the same premiums for both sexes. This would probably reduce the benefits available for females without increasing the benefits for males, a result contrary to the interests of participants.

The problems that might arise under a contributory defined contribution plan in this connection are the same as those problems that arise under a non-contributory plan.

C. *Target Benefit Plans*

There are retirement plans which have some aspects of a defined benefit and some aspects of a defined contribution plan, the principal one of which is known as a target benefit plan. (App. A, p. A-5.) These plans have as a goal a specified defined benefit and employ actuarial computations to determine what the contribution should be to provide that benefit. On the other hand, as is the case with defined contribution plans, individual accounts are established which are then used for each employee to provide benefits which may or may not be approximately equal to the original objective. Some target benefit plans take the sex of employees into account in determining the contribution levels and others do not. Inevitably, those plans which take sex differences into account result in higher employer contributions for the class of female employees than for the class of male employees to the extent other factors are equal, and the

lump-sum payment available at retirement is therefore higher for females than for males, although if an annuity is purchased the amount of the installment payments might be more or less for females than for males.

On the other hand, if sex differences are not taken into account in determining the contribution levels, then the contributions are equal for both sexes, the lump-sum amount available upon retirement is identical, and the target benefit will necessarily not be reached in both cases since the monthly installment payment that can be provided with the identical balances will be lower for women than for men. Here again the question arises whether one or the other of these approaches is required by the provisions of Title VII and, if so, which one it is.

III. The Intent of Congress

We stated earlier that we would leave to others the conventional analysis of the legal materials that may bear upon the decision of this case. Here we depart slightly from that commitment to refer briefly to one action of the Congress that occurred well after the enactment of the Civil Rights Act of 1964.

So far as the views of the Congress which adopted the 1964 Act are concerned, we think it reasonably clear that neither the members of that Congress nor the members of the committee that drafted and considered the legislation ever focused in any meaningful way upon what was meant by the meaning of the term "discrimination" in this intricate context. There does not seem to have been even scant consideration, when that Act was adopted, of the extent and the manner in which classification on the basis of sex had been previously employed in connection with the determination of contributions and benefit levels for employee retirement plans and to what extent, if any, then current practices might have to be modified as the result of passage of the Act.

Ten years later, in the Employee Retirement Income Security Act of 1974, Congress established minimum amounts that must be paid to participants under defined benefit plans who terminate their employment prior to retirement. The terminology employed speaks of the "accrued" benefit which the employee must receive. Section 204(b)(1)(F) states that, if a plan is funded exclusively by the purchase of insurance contracts which satisfy the requirements of § 301(b)(2) and (3) of the Act, the requirement for a minimum payment will be satisfied by the payment to the employee of the cash surrender value of the insurance contract. In this instance the members of the committee that drafted and considered the legislation were quite knowledgeable about the subject matter and did understand that the type of contract described in § 301 of the Act would provide cash surrender values for female employees that were higher than the corresponding values provided for male employees with identical employment histories, although we must point out that we know of no statement in the legislative history that reflects this understanding. One may speculate over whether the persons involved gave any thought at the time to the consistency of what they were then doing with the provisions of Title VII of the Civil Rights Act of 1964. There is no doubt, however, that they expressly auhorized the adoption and funding method of a plan that included provisions resulting in the payment of numerically unequal benefits to men and women upon termination of employment.[19]

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[19] The Pension Benefit Guaranty Corporation, the governmental agency which administers the plan termination insurance program under Title IV of ERISA, has issued regulations containing factors which must be used for allocations of pension plan assets under certain circumstances. These actuarial factors published by the Pension Benefit Guaranty Corporation vary by age and sex and result in more assets being allocated to provide benefits for a female than for a male. 41 Fed. Reg. 48484, 48489-91 (1976).

In a related context, on the other hand, the same statute includes a provision that indicates that the use of a "unisex" table is appropriate in certain circumstances, also related to the amount of accrued benefits under a contributory defined benefit plan. Under such a plan, the monthly benefit payable at retirement is usually unrelated to the amount of employee contributions. Thus a plan might provide for employee contributions of 4% of pay and monthly benefits at age 65 of 1½% of pay times years of service, and there is no need to determine upon retirement what portion of the benefit is regarded as having been derived from employee contributions and what portion is regarded as having been provided by employer contributions.

The portion of the employee's accrued benefits which is derived from his own contributions is always 100% vested, while the portion derived from employer contributions is not usually vested before 10 years of service. If the employee terminates employment before the employer-derived benefit fully vested, ERISA requires the total accrued benefit to be divided into the employee-derived portion and the employer-derived portion.[20] The Act sets forth explicitly how this shall be done and, in determining the employee-derived portion, requires the accumulated employee contributions to be multiplied by an appropriate actuarial conversion factor.[21] The conversion factor in the statute and supplemental factors published by the Internal Revenue Service[22] are unisex factors. A plan is permitted to use sex-differentiated factors if these result in a larger employee-derived benefit,

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[20] Employee Retirement Income Security Act of 1974, § 204(c), 29 U.S.C. § 1054(c) (Supp. V 1975).

[21] Employee Retirement Income Security Act of 1974, § 204(c)(2)(B)(ii), 29 U.S.C. § 1054(c)(2)(B)(ii) (Supp. V 1975).

[22] Rev. Rule 76-47, 1976-1 INT. REV. BULL. at 109.

and some plans have done so, but most contributory plans have adopted the unisex approach.

CONCLUSION

The foregoing discussion is illustrative rather than exhaustive; it is over-simplified and omits what we hope is only irrelevant detail. We should be glad to amplify it in any way if that should be thought helpful.

We believe that any sweeping decision that only numerical identity is permissible in making contributions and in the payment of benefits would have a deeply disturbing effect upon the current methods of providing retirement benefits and might adversely affect millions of participants. We respectfully suggest that this Court render a decision that will not have widespread and unintended adverse effects.

Respectfully submitted,

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APPENDICES

APPENDIX A

PRINCIPAL TYPES AND FEATURES OF RETIREMENT PLANS

Until the adoption of the Employee Retirement Income Security Act of 1974, the principal regulation of retirement plans by the federal government arose out of the necessity for such plans to meet the requirements for "qualification" under § 401 of the Internal Revenue Code. Contributions made by an employer are deductible in the year in which made if the plans are "qualified," while the employees are taxed, not in that year but in the year in which their benefits are received. In addition, the earnings on the accumulated contributions are not taxable.

One of the more significant requirements for qualification is that the plan must be non-discriminatory, that is, that the plan may not explicitly by its terms, or in practice, provide more desirable pensions for officers, shareholders, and highly compensated employees than it does for other classes of employees. The regulations adopted to insure that this requirement is met are often quite complex, but prior to ERISA, plan sponsors (employers and joint boards of trustees) had broad flexibility with respect to the design of such retirement plans, more specifically with respect to the nature and amount of benefits to be provided, contribution formulas to be employed, eligibility requirements and vesting provisions, and the inclusion of a wide variety of optional features.[1] Since the effective date of ERISA many more substantive requirements must now be met, but the freedom of the plan sponsor to fashion the terms of the plan still remains very broad. In consequence it is not possible

[1] In many cases, of course, the terms of the plan were the subject of collective bargaining between the employer and union representatives.

within reasonable page limitations to provide a comprehensive or exhaustive account of the great variety of provisions found in retirement plans and of the number and kind of individual variations. With this qualification, however, we can describe the major categories into which such plans can be divided and describe in adequate detail the major features that are relevant to the issues before the Court.[2] There are so many different kinds of plans and so many diverse features, that there are likely always to be exceptions to any unqualified general statements in this area.

A. *Defined Benefit Plans*

A defined benefit plan, as the name implies, promises a benefit that is determinable by the use of a stated formula set forth in the plan. Typical examples might be: (1) an annual pension equal to 2% of the sum of the annual amounts earned in each year of employment; (2) 1¾% of the final year's earnings multiplied by the number of years of employment; (3) 2% of the average earnings during the last five years of employment multiplied by the number of years of employment; and (4) $20 per month for each year of employment without reference to the amount earned. Thus, for these plans, while the exact amount of any person's pension cannot be known until retirement, the manner in which it will be determined is known in advance. Defined benefit plans generally provide the same annual pensions for retiring men and women who retire at the same age with identical employment histories.

An important requirement added by ERISA in 1974 is that a plan which provides for a pension that is payable for the lifetime of the employee must also provide

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[2] The Bankers Trust Company of New York periodically publishes studies of the retirement plans of large United States corporations which include useful information not available elsewhere.

that for married employees, in the absence of an election by the employee to the contrary, payments must continue until the deaths of both the employee and his or her spouse.

A defined benefit plan may provide that all of the costs of providing the benefits will be borne by the employer, and it may also provide for some part of the cost to be borne by contributions by the employees. A substantial minority of defined benefit plans includes such a requirement. Usually the portion provided by the employees is less than the amount contributed by the employer. Probably the largest plan of this kind is that provided by the federal government for its Civil Service employees. A contributory plan will contain provisions for the return, at a minimum, of the employee's contributions plus interest if his or her employment is terminated before the anticipated retirement age. Usually the benefits payable upon retirement do not depend upon how the funds held by the plan are invested or whether the investment results are good or bad.

Defined benefit plans often provide that the amount of the pension will be offset by all or part of the benefits payable under the Social Security system. For example, the plan might provide that the amount of the pension at age 65 shall be reduced by 50% of the amount of the Social Security benefit. Defined benefit plans may provide, and ordinarily do provide, for elections by the retiring employee with respect to the form in which the benefits shall be paid, *i.e.*, (a) in a monthly amount payable over the lifetime of the employee, (b) in a monthly amount payable over the lifetime of the employee but with a minimum of payments for a 10-year period, (c) in a monthly amount over a stated number of years, or (d) in a lump sum. The plan may provide for earlier retirement than the "normal retirement age" or for deferred retirement. In each case the plan will provide

whether and how the benefits will be affected by these elections and events.

B. *Defined Contribution Plans*

Defined contribution plans focus initially upon the amount of contributions rather than the determination of benefits. They provide for contributions on behalf of each employee. Under some plans of this type, known as money purchase pension plans, the contribution for each employee is defined, often in terms of a stated percentage of annual salary. For other plans of this type, known as profit-sharing plans, the amount of the employer's contribution for each year may be determined by reference to a formula related to profits, or may be entirely at the employer's discretion. This amount is then allocated to each of the employees by a stated formula ordinarily in proportion to annual compensation. Under such a plan, it is quite possible that in some years no contribution at all will be made.

Under a defined contribution plan, individual accounts are kept for each employee during the period while he or she is still working, and an amount is credited annually to each of those individual accounts. The funds are invested and the earnings or the losses serve to increase or decrease the amount in the account. Since the amount in each individual employee's account is used to provide benefits for that employee upon retirement, the investment experience affects quite significantly the amount of the benefits that will be received. Defined contribution plans may or may not provide for employee contributions. In one type of defined contribution plan, the "thrift" or "savings" plan, the amount of the employer's contribution is determined by the amount of the employee's contribution, and each employee may elect whether to participate in the plan at all.

A plan may provide that part of the contributions will be used to purchase life insurance payable to designated beneficiaries if the employee should die prior to retirement and for the use of the cash surrender value under these life insurance policies to supplement the amounts in the employee's account to provide retirement benefits.

As is the case under defined benefit plans, the benefits may be in the form of a lump sum or installment payments over a designated period, or the plan may provide for the purchase of an annuity payable over the lifetime of the employee. Variations in the form of annuities are also often available. The annuity may be purchased at the date of retirement, or through installment payments to an insurance company while the employee is still actively employed. The plan may include provision for early retirement or for withdrawal of all or part of the account prior to retirement but, unlike the case with defined benefit plans, there is no need to provide how the amount of the benefit will vary depending upon what form of benefit is chosen by the employee or the date on which benefits are taken or commenced. The employee will receive benefits equivalent in value to what is credited to his or her account.

C. *Other Types of Plans*

There are some plans that do not fall comfortably into one or the other of these two categories. A target benefit plan is a special type of defined contribution plan. Such a plan employs a formula which establishes a "target benefit" that the employer desires to provide. That might be, for example, 1% of the employee's final year's salary multiplied by the number of years of employment. A computation is then made of the amount of annual contribution needed to provide the target benefit, and these contributions are then made by the employer and employees. Unlike the case under defined benefit plans, how-

ever, these contributions are then allocated to individual accounts for each employee, and the plan is then administered as a defined contribution plan. That is, the amount of the target benefit is not guaranteed by the employer or by the plan, and the employee receives whatever benefit can be provided with the amount in this account. This may be more or less than the target benefit, depending upon whether the rate of actual investment income has been equal to the rate assumed in the determination of the contributions that were made, and upon other factors. Some plans take the sex of the employee into account when determining what annual contributions shall be made, and some do not.

In some industries collective-bargained multi-employer plans have been established that accumulate the contributions of several employers and provide retirement credits to persons who may work for one or more of them over their working lives. These plans also do not fit easily into one or the other of the two major categories, and there is currently pending an active dispute over whether they should be treated for certain purposes as defined benefit or defined contribution plans.

Since 1962, self-employed persons have been able to establish tax favored plans for themselves and their employees, and, for the most part, these plans have been defined contribution plans, although it is quite feasible for a partnership with many partners to adopt a defined benefit plan, and several large law and accounting firms have done so.

A special type of plan known as a tax deferred annuity plan may be established by a public educational institution or by a charitable organization for its employees, and these plans are provided favorable tax treatment similar to that available to qualified plans. The contributions are nominally and sometimes actually made by the employers, but in most cases they are derived from

reductions in salary voluntarily agreed to by the employees. These plans are invariably defined contribution plans.

Finally, since 1974 individuals who are not self-employed but are not covered under employer established retirement plans may establish individual retirement plans of their own, and these are also and necessarily defined contribution plans.

D. *The Funding and Administration of Retirement Plans*

Another important method of categorizing retirement plans, and one which is highly relevant to the issues in this case, relates to how and by whom the plans are administered. All retirement plans may be divided into insured plans or non-insured trusteed plans, although many plans use a combination of these two approaches. Both defined benefit plans and defined contribution plans may be either trusteed or insured. Under a trusteed plan, the employer makes annual contributions to a trustee, which in the overwhelming number of cases is a bank or trust company although this is not required by law. Those amounts are held and invested by the trustee and used to pay the employee benefits provided by the plan.

Under an insured plan, the employer enters into a contract with an insurance company (ordinarily a group annuity contract and sometimes individual insurance or annuity contracts for each employee). The employer pays contributions (also called premiums) to the insurance company which holds and invests the funds and agrees to disburse them for the purpose of paying the promised benefits to the employees in the manner provided by the plan and the contract. In many cases the insurance company will assume a contractual liability directly to the employees, sometimes upon the retirement of each employee and sometimes at an earlier date, to

assume the employer's obligations to pay the plan benefits. If this is done, the relationships that are created are quite different from those under a trusteed plan, where the trustee agrees only to use the funds held in the trust to pay the benefits and does not assume an independent obligation—as an insurance company does under many insured plans—to continue to pay benefits whether the amounts contributed by the employer turn out to be more or less than required for that purpose.

An employer that has adopted a trusteed plan may decide to direct the trustee to provide some or all of the promised pensions by purchasing annuities from an insurance company as the employees retire. In that case, the plan will in fact be *pro tanto* an insured plan, but it will usually continue to be spoken of as a trusteed plan.

APPENDIX B

FEMALE AND MALE LONGEVITY

I. The Observed Data

Women have lived longer than men both in the United States and throughout the world. U.S. Census Bureau,[1] Social Security Administration,[2] and United Nations[3] references support this observation. Swedish records recount the observation as early as 1780.[4] Longevity experience among insureds has been recorded by the Society of Actuaries or its predecessors since 1892. The tables of the Society have consistently shown higher female longevity, for both women working inside and outside the home.[5] Thirty year-old women are observed to live 6.2 years, on the average, longer than their male

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[1] U.S. DEPT. OF HEALTH, EDUCATION, AND WELFARE, PUBLIC HEALTH SERVICE, NATIONAL CENTER FOR HEALTH STATISTICS, VITAL STATISTICS OF THE UNITED STATES 1971, Vol. II, Pt. A, § 5 at 7-10 (1975).

[2] Bayo, *Mortality of the Aged*, 24 TRANSACTIONS, SOCIETY OF ACTUARIES, Pt. 1 at 1-24 (1972).

[3] UNITED NATIONS, DEMOGRAPHIC YEARBOOK 700-26 (23d ed. 1971).

[4] N. KEYFITZ & W. FLIEGER, WORLD POPULATION: AN ANALYSIS OF VITAL DATA 604-39 (1968).

[5] M'Clintock, *Special Tables for the Estimation of Mortality Among Annuitants*, 6 TRANSACTIONS OF THE ACTUARIAL SOCIETY OF AMERICA, 13, 22-23 (1900). With regard to both women working inside and outside the home, greater longevity is shown by life expectancies calculated from data in Peterson, *Group Annuity Mortality*, 4 TRANSACTIONS, SOCIETY OF ACTUARIES 246, 262-67 (1952). This was confirmed by calculations of life expectancies from data in Greenlee & Keh, *The 1971 Group Annuity Mortality Table*, 23 TRANSACTIONS, SOCIETY OF ACTUARIES, Pt. 1 at 569, 583-96 (1972) (hereinafter cited as *1971 Group Annuity Table*). Analysis of current data as to populations that include both women working inside and outside the home also show greater female longevity. *Report of the Committee on Group Annuities, Group Annuity Mortality* in TRANSACTIONS, SOCIETY OF ACTUARIES, 1975 REPORTS 287, 289-316 (1976).

counterparts, 50 year-old women live 5.7 years longer, and 65 year-old women live 4.1 years longer.[6] This observed data, as recorded by actuaries, is used as the best available predictor for the longevity of groups of persons insured under pension plans of employers.

II. The Reasons for Greater Female Longevity

Two principal factors have been suggested as explanations for greater female longevity: the biological factor and social and economic factors. We include a brief summary of part of that discussion, not because we believe it relevant to the issues in this case—a matter about which there is a difference of opinion—but because it may be of interest to the Court.

Amram Scheinfeld's book, *Your Heredity and Environment* (1965), discusses the question of biological factors. At pages 217-21 he asserts that bodily makeup and chemical functioning differ between women and men, and that these differences give women advantages in resisting or overcoming most diseases. He also observes that when male and female infants suffer the same accidents, the chances for death are greater for the males. As a reason for the longevity difference, he suggests that females originate with two X chromosomes and males originate with only one. If a female inherits an X chromosome that includes a recessive gene, a normal gene in the other X chromosome can compensate; males

[6] Calculated from *1971 Group Annuity Table, supra,* note 5 at 585-96. The insurance tables for persons insured under individual annuity contracts also show similar results: life expectancies for females are 5 years more at 30, 4.4 more at 50, and 2.9 more at 65. Calculated from data in Cherry, *The 1971 Individual Annuity Mortality Table,* 23 TRANSACTIONS, SOCIETY OF ACTUARIES, Pt. 1 at 475, 496-99 (1972). The group and individual mortalities differ because of the different populations that are covered by the two types of annuities. However, both exhibit a longer female longevity. Under individual annuities longer female longevity was also exhibited in life expectancies calculated from earlier data in Jenkins & Lew, *A New Mortality Basis for Annuities,* 1 TRANSACTIONS, SOCIETY OF ACTUARIES 369, 386-89 (1949); Current data under individual annuity contracts also confirm this. *Mortality Differentials by Sex,* in TRANSACTIONS, SOCIETY OF ACTUARIES, 1973 REPORTS 225, 228 (1974).

have no such compensating possibility. He cites as some evidence for his view the observation that in poultry, where the chromosome pattern is reversed, embryonic deaths are much higher among females. He writes that, since such factors as childbearing have become less hazardous, and as the habits and ways of living of both sexes have become more similar, "*under like conditions, females are better adapted to cope with most human afflictions* because they are genetically better constructed and have a more efficient chemical system." (Emphasis in original.)

Additional literature bearing on female longevity relates to prostaglandins, which effect the output and contractibility of the heart and tension in blood vessels. Women produce significantly less of this substance than men, and the substance is said by some to affect, in the greatest degree, the bodily functions associated with the causes of death that account for most of the variation in mortality by sex.[7]

One feature of the observed data warrants separate mention: it appears that, even during the present period when more women are entering work outside the home, the longevity advantage of women over men is increasing. One study indicates that since 1920 the overall ratio of male to female mortality has increased by over 60%.[8] The reasons for this apparent trend are not clear.

[7] Fellers & Jackson, *Non-Insured Pensioner Mortality, The UP-1984* Table, 25 PROCEEDINGS, CONFERENCE OF ACTUARIES IN PUBLIC PRACTICE 456, 468-69 (1976). *See also* Metropolitan Life Insurance Co., *Sex Differentials in Mortality,* 55 STATISTICAL BULLETIN 2, 5 (Aug. 1974).

[8] Metropolitan Life Insurance Co., *Sex Differentials in Mortality Widening,* 52 STATISTICAL BULLETIN 2, 3 (Dec. 1971). *See also Mortality Differentials by Sex,* in TRANSACTIONS, SOCIETY OF ACTUARIES, 1973 Reports 225 (1974); Metropolitan Life Insurance Co., *Sex Dif-*

A possible explanation is that recently expressed by Barbara J. Lautzenheiser, Vice President and Actuary, Bankers Life Insurance Company of Nebraska:

> ". . . as socio-economic conditions of the sexes are equalized, the biological differences are more apparent and the differences between mortality become greater." [9]

A factor lending some weight to this view is that perinatal mortality rates (stillbirths occurring beyond the 20th week after conception and deaths in the first week of infancy) are over 20% higher for males.[10] Such differences cannot be explained by other than biological differences, and current data indicates that the differences may continue to widen.[11]

On the other side, it has been pointed out that past working experience of women has contained few high tension jobs, and with women entering more of these jobs it is contended that in due course the observed differences in longevity will either be reduced or be explained as attributable to other causes.[12]

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ferentials in Mortality, 55 STATISTICAL BULLETIN 2, 2-5 (Aug. 1974); Bayo & McKay, *U.S. Population Projections for OASDHI Cost Estimates*, ACTUARIAL STUDY No. 72 at 10 (U.S. Department of Health, Education and Welfare, Social Security Adm., Ofc. of the Actuary, July 1974).

[9] Lautzenheiser, *Sex and the Single Table: Equal Monthly Retirement Income for the Sexes?*, 2 EMPLOYEE BENEFITS JOURNAL, No. 1 at 8, 12 (Fall 1976).

[10] Metropolitan Life Insurance Co., *Reduction in Perinatal Mortality*, 43 STATISTICAL BULLETIN 6, 7 (May 1962).

[11] See, *e.g.*, "Fewer Heart Disease Deaths," Wall St. J., July 26, 1977, at 1, col. 3 (decline in heart disease projected by the Census Bureau to prolong women's lives by 4 years and men's lives by 3 years by next century).

[12] Note, *Sex Discrimination and Sex-Based Mortality Tables*, 53 B.U. L. Rev. 624 n.2 (1973).